

NOTES ON THE SYNONYMY OF  
*SCAPHINOTUS KLAHOWYAE* PERRAULT, 1973, WITH  
*S. JOHNSONI* VAN DYKE, 1924  
(COLEOPTERA: CARABIDAE)<sup>1</sup>

ALBERT GREENE<sup>2</sup>

Department of Entomology, Washington State University  
Pullman, WA 99163

ABSTRACT

*Scaphinotus klahowya* Perrault (1973) is shown to be conspecific with *S. johnsoni* Van Dyke (1924), and the names are synonymized. Characters likely to cause confusion in comparing Perrault's description with other accounts of the species (elytral striae, male median lobe, pronotum, prosternal process, and color) are discussed. Perrault's combination of the subgenus *Brennus* with *Stenocantharus* is unwarranted. His characterization of the habitat at Klahowya, Washington, as "rain forest" is technically incorrect.

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*Scaphinotus (Brennus) johnsoni* was described by Van Dyke (1924) from a single specimen collected in the Olympic Mountains of Washington, and in the next 20 years he was able to study only 3 additional specimens. He wrote a second account (Van Dyke 1944) in which he stressed the resemblance of this species to the larger *S. (Stenocantharus) angusticollis* (Mannerheim), a ubiquitous carabid occurring in the same habitat. *S. johnsoni* is still extremely rare in collections, but descriptions and/or discussions of it are included in Hatch (1953), Lindroth (1961), and Gidaspow (1968). The latter two authors also remarked on its strong resemblance to the distinctive and easily recognized *S. angusticollis*, enabling the smaller *S. johnsoni* to be readily distinguished from other northwestern cychrines.

Perrault (1973) recently described *Scaphinotus klahowya* from 4 specimens collected by him on the Olympic Peninsula, Washington. Although he noted that these specimens were first thought to be *S. johnsoni* and that *S. klahowya* was evidently closely related to *S. johnsoni*, he gave no indication of actually examining representatives of that species, relying instead on published descriptions. His chief basis for distinguishing *S. klahowya* was its elytral striae, an inconstant character in many cychrines which has caused confusion in the past (Greene 1975). The only pair of comparative figures in his paper juxtaposed an illustration of the pronotum of *S. klahowya* with that of *S. angusticollis*, rather than the more logical comparison with *S. johnsoni*.

In early April, 1975, I visited Perrault's type locality, Klahowya, a campground on U. S. Highway 101 which does not appear on many Washington road maps. It is 9.5 miles W of Fairholm and 8 miles E of Sappho. Five

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<sup>2</sup>Present address: 13302 Keating St., Rockville, MD 20853.

specimens of the form in question were collected and were compared with a paratype of *S. klahowya* (USNM), the type of *S. johnsoni* (CAS), and 6 examples from other locations on the Olympic Peninsula: 7 miles N of Forks (1, AMNH), determined as *S. johnsoni* by Darlington; "N Olympic Mts." (1, AMNH), Ozette (2, USNM), and Tokeak Point (1, USNM), all determined by Gidaspow; and ca. 4 miles W of Klahowya (1, Loren Russell collection). Perrault's description of *S. klahowya* (with several minor exceptions) applies equally well to all 13 specimens. The variation between all specimens is either comparable to or less than that exhibited by most other northwestern cychrines. I therefore believe that *S. klahowya* is conspecific with *S. johnsoni* and that the name should be considered a synonym of *S. johnsoni* (**New Synonymy**).

Following are brief discussions of the characters likely to cause confusion in comparing Perrault's description with other accounts of *S. johnsoni*.

**Elytral striae.** Perrault (1973) stated "The elytral sculpture [of *S. johnsoni*] was described by Lindroth (1961), and Gidaspow (1968) as similar to that of *S. [angusticollis] olympiae*, the main differentiating feature being the length of the labrum. To the contrary, my specimens have very distinct, fine and regular striae though not so regular on the side of the elytra." In his key to several *Scaphinotus* spp. found on the Olympic Peninsula, *S. klahowya* is distinguished by "Striae very distinct, fine and regular, easy to count" whereas *S. angusticollis* and *S. johnsoni* are lumped together under "Striae shallow, difficult to count." Perrault's impression of the elytral striae of *S. johnsoni* is one indication that he must not have examined an actual determined specimen. The striae are very distinct, often regular, and quite easy to count in most specimens, much more so than in *S. angusticollis*. Furthermore, there are several references to distinct striae in the literature. Gidaspow (1968) noted that the striae of *S. johnsoni* are "very much as in *angusticollis*," but went on to say that the latter species has "less-impressed, more irregular elytral striae" than *S. johnsoni*. Van Dyke (1944) stated that "the striae in *johnsoni* are . . . more distinctly and deeply impressed" than in *S. angusticollis*. Perrault was evidently influenced by Lindroth's (1961) key in which both species are characterized as having "shallow" striae, which is true in comparison with many other *Scaphinotus* spp.

Most specimens of *S. johnsoni* examined by me have similar striae, although some have fairly distinct variations. Gidaspow's (1968, figs. 56, 60) illustrations of elytra from 2 specimens, including the type, give an indication of the range. Three of my specimens from Klahowya, 2 intact pairs of elytra collected there at the same time, 3 specimens from other locations on the Olympic Peninsula, and the paratype of *S. klahowya* have the striae "fine and regular" over most of the disk, as Perrault described. Most authors have characterized these striae as "punctate", although Hatch's (1953) "coarsely crenate" is probably more accurate for most specimens. Two specimens from Klahowya and 4 from other locations on the Peninsula have from 2 or 3 to most of the striae either incomplete and quite irregular, or fairly straight but interrupted, actually formed by a series of elongate punctures. This irregularity is usually more pronounced towards the sides and apices of the elytra. One specimen from Ozette has striae noticeably shallower than in other examples, although still more deeply impressed than in most specimens of *S. angusticollis*.



Ten of the specimens examined, including the paratype of *S. klahowya*, all my examples from Klahowya (in addition to the 2 elytral pairs) and Van Dyke's type, have 19 striae; the other 3 have 18 striae. There may be 20 striae in some specimens (Gidaspow 1968).

**Male median lobe.** Perrault's (1973, fig. 6) lateral view of the median lobe of his lone male specimen corresponds quite well to Gidaspow's (1968, fig. 108) drawing. However, the dilation in the apical half as shown in his dorsal sketch (fig. 5) differs from Gidaspow's (fig. 109) rendition. Perrault was apparently unaware that in *Brennus* the median lobe can vary considerably within a species, from both lateral and dorsal aspects. Gidaspow's outlines (figs. 100-136) in her revision of the group are instructive in this regard.

Seven of the specimens studied, including all those I collected at Klahowya, are males. Their genitalia all resemble Gidaspow's and Perrault's lateral diagrams, but dorsally most correspond to Gidaspow's illustration. The median lobe of one Klahowya specimen has a dilation almost as pronounced as Perrault showed, but occurring closer to the apex.

**Pronotum.** Gidaspow's (1968, fig. 81) illustration of the pronotum of *S. johnsoni* is slightly misleading in several aspects; Perrault's (1973, fig. 1) outline is generally more accurate. The anterior pronotal margin on all specimens examined is much wider than Gidaspow has shown. It may be slightly curved mesad as Perrault has drawn it, or straight as in Gidaspow's figure. No specimen has the lateral margins as broadly rounded as Gidaspow showed them; Perrault's outline is extremely accurate as to the fairly sharp curve which occurs slightly closer to the anterior margin than in Gidaspow's figure. Gidaspow's shading of the disk puts a little too much emphasis on the lateral longitudinal impressions—they are usually deep where they arise from the posterior transverse impression, as Perrault has indicated, but often become quite indistinct over most of their length and may not be continuous. However, Perrault's failure to illustrate the lateral longitudinal impressions for most of their length and his use of simple lines to indicate the anterior and posterior transverse and median longitudinal impressions may also be a source of some confusion.

Pronotal form and sculpturing within other *Brennus* spp. sometimes vary considerably (Gidaspow 1968, figs. 73-99). These characters in *S. johnsoni* (= *S. klahowya*) are quite constant in the specimens examined.

**Prosternal process.** The paratype of *S. klahowya* examined had been glued to a piece of card, and thus could not be inspected ventrally. However, the prosternal process is basically similar in most specimens of *S. johnsoni*. Gidaspow's (1968, fig. 54) and Perrault's (1973, fig. 4) renditions appear so different because the former elected to emphasize the lateral lobes whereas the latter favored the fovea between them. This fovea is nearly non-existent in some specimens, more pronounced in others; it is a simple depression, or bifurcate as in Perrault's drawing. The lateral areas are strongly or weakly convex or even slightly depressed, spherical or quite irregular. One teneral specimen examined has 2 spherical lobes which had darkened more rapidly than the surrounding cuticle, and stand out as strongly as in Gidaspow's figure. In most specimens, however, the apparent form of the sculpturing changes to some extent with the angle of illumination. My specimens from Klahowya are varied as much as are individuals collected at other locations on the Peninsula.

**Color.** Hatch (1953) described the elytra of *S. johnsoni* as "black or chocolate brown or violet . . . at times with metallic green margins." Those specimens examined which could be called "chocolate brown" (as Van Dyke described his type) or "reddish brown" (Gidaspow 1968) are teneral. I have shown that the elytra of some *Scaphinotus* spp. retain a noticeably lighter color for about 5 weeks after eclosion (Greene 1975). Since this is usually a period of high locomotor activity, it is not surprising that some *S. johnsoni* collected should exhibit this brownish hue. Four of my specimens from Klahowya have the violet elytra Perrault described, the fifth is black with a strong violet luster. The specimen from 4 miles W of the campground and the one from ca. 12 miles W (7 miles N of Forks) both appear almost flat black when viewed with either an AO single-head or Roxter dual-head high intensity lamp, but have a violet luster in natural or fluorescent light. Specimens from Klahowya tend to have a slightly more brilliant blue-green color in the marginal groove than the other specimens examined. However, upon softening in a relaxing jar, small amounts of grease rising to the surface obscured much of the original elytral color in my Klahowya individuals, dulling the margins and turning the disks black.

#### SUBGENERA *Brennus* and *Stenocantharus*

Perrault (1973) also combined the subgenus *Brennus* with *Stenocantharus*, stating "I believe that the differences given between those 2 subgenera, when compared with the similarity of the 3 species [*S. klahowya*, *S. johnsoni*, and *S. angusticollis*] within the species group defined above, do not justify keeping them distinct." Gidaspow (1968, 1973), who has worked extensively with cychrines, does not agree. In a discussion of cychrine taxonomy in her later paper, she noted that "In every subgenus of *Scaphinotus* are species that share characters of another, probably closely related, subgenus. Of course, all species belonging to any group have the quite distinct characters of their own subgenus." The *Stenocantharus/Brennus* division was convenient and realistic enough for Van Dyke (1944), Hatch (1953), and Ball (1960) to endorse, in addition to Gidaspow. Lindroth (1961) gave different names (*angusticollis* group and *marginatus* group) to the same taxa. It is not good taxonomy to reclassify taxa on the basis of examination of 1 species (4 specimens).

#### NATURAL HISTORY

*S. johnsoni* has so far been collected only on the northern Olympic Peninsula and the southern part of Vancouver Island, but appears to be fairly widespread in these restricted areas. It has been found at 4500 feet at Boulder Lake, 3.5 miles W from Olympic Hot Springs (Hatch 1948), and close to sea level near Sooke, on Vancouver Island (Lindroth 1961) and at Toleak Point. At 800 feet, Klahowya is not technically "rain forest" as Perrault described it. This designation is reserved for old-growth, near-climax forests in the coastal *Picea sitchensis* zone, dominated by *P. sitchensis* and *Tsuga heterophylla* and meeting several other criteria (Franklin and Dyrness 1973). Klahowya is on the border of the *P. sitchensis* and *T. heterophylla* zones and has an overstory dominated by comparatively young *T. heterophylla*, which is the only conifer successfully reproducing.



However, the term is probably not critical so far as the requirements of *S. johnsoni* are concerned. As in true rain forest, the forest floor at Klahowya is quite moist, with *Oxalis oregana* and *Polystichum munitum* extremely abundant.

I spent less than 4 hours collecting—mostly breaking apart rotted logs—at Klahowya on 10 and 12 April, 1975. Two of the *S. johnsoni* captured were torpid and deep within the logs, and 3 were within 1 inch of the log surface and became active when exposed. In addition, numerous fragments of this species were found, chiefly elytra and pronota. The only other cy-chrines collected were 1 *Cychrus tuberculatus* Harris and 3 *S. marginatus* (Fischer). It appears that like another uncommon northwestern cychrine, *S. manni* Wickham, *S. johnsoni* may be relatively abundant in limited areas of favorable habitat.

#### CONCLUSIONS

The elements contributing to the problem concerning *S. johnsoni*/*S. klahowya* are often encountered and hardly unique to this particular case: insufficient material; variation, sometimes considerable, exhibited by individuals of 1 species; and varying interpretations (also sometimes considerable) of the same structure by different illustrators. Lindroth's (1969: xxix) statement that "No scientific description or picture, however detailed and however skillful, is a perfect substitute for the animal itself" cannot be overemphasized. However, accumulating sufficient examples of the animal for evaluation is sometimes difficult. In her revision of *Brennus*, Gidas-pow (1968) was able to inspect only 14 specimens of *S. johnsoni*. Therefore, despite his erroneous conclusions, Perrault (1973) performed a valuable service in calling attention to Klahowya as a location where this elusive species may be encountered and studied.

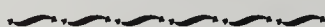
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## GYMNETIS CHALCIPES UNDATA (OLIV.) IN PUERTO RICO (COLEOPTERA: SCARABAEIDAE)

JULIO MICHELI

14 Baldorioty Street, Mariani, Ponce, Puerto Rico 00731

On 6 September 1975 I collected 1 specimen of *Gymnetis* (= *Paragymnetis*) *chalcipes undata* (Olivier) about 3 miles north of Ponce, Puerto Rico, on Road 132. To my knowledge this is the first record of this species, as well as the first record of the subfamily Cetoniinae, from Puerto Rico. The species is recorded from South America and Hispaniola by Blackwelder (1944) and Schenkling (1922).

The specimen was found floating in a large metal drum full of water. There were bananas immersed in the water, a local practice to prevent the green fruit from ripening too soon. I was told the bananas had been bought at the local market-place and placed in the drum the day before. Since bananas are imported from time to time I suspect that the specimen may have been accidentally introduced with bananas. No specimens were found earlier and no additional specimens were found afterwards; I have collected regularly for 5 years at this locality.

Dr. Brett C. Ratcliffe, University of Nebraska, Lincoln, determined the specimen and read the manuscript.

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